



MUNICIPAL SOLID WASTE (MSW) POWER PLANTS IN SINGAPORE

CASE STUDY/INSIGHT

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The management of municipal solid waste (MSW) is a big nightmare in the developing countries. In 1990s, not enough attention was given for the management of MSW in the developing countries. Only in early 2000s, there was increased awareness and the countries started paying much more attention to the management of MSW. They introduced several concepts like source separation of MSW in order to segregate biodegradable wastes from the others and carry out engineered landfill of the remaining wastes. The segregated biodegradable wastes are collected and transferred to the MSW biogas power plants to generate electricity.

These kinds of projects started emerging only after early 2000s in the developing countries due to increasing environment concerns of MSW disposal and due to Kyoto Protocol. The countries started allocating more funding for the management of MSW. Engineered landfill options were introduced to effectively create and manage new landfill sites. In the existing landfill sites, utilization of landfill gas to generate electricity were demonstrated. Tests were carried out by drilling holes to identify the potential of extracting and producing electricity using the landfill gas. A number of such project initiatives took place in Southeast Asia after Kyoto Protocol.

However, in case of developed nations, MSW are effectively managed using the incineration technology. In the incineration power plants, the MSW collected are transported from various places and are simply dumped at the power plant fuel bunkers. The size of the wastes could vary from tiny 5mm to even large chairs. The wastes are directly thrown into the furnace of the power plant and burnt effectively to produce steam and electricity. The incineration power plants are generally 2 to 3 times more expensive than a normal biomass power plant as they are robust and they require stringent environment management measures for effluents and ashes.

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Singapore has implemented several such incineration power plants. The country managed to do it effectively as the calorific value of MSW in Singapore is very high. The MSW incineration power plants are installed with very high cost and with modern and robust material. The revenue systems from tipping fees, electricity export, etc., are planned and managed in a fair way so that these power plants operate in a sustainable manner.

Delegates from several Southeast Asian countries visit these incineration power plants in Singapore to study its model of operation. However, duplicating such incineration power plants in neighbouring countries is a not an easy task. The key challenge is the difficulties in source segregation and very low heating value of the MSW.

We visited several incineration power plants in Singapore and they work perfectly. Visiting such power plants was not difficult for us. When our team approached Singapore authorities for the visit, they were very friendly, receptive and courteous. They made all the arrangement to visit the power plants. Singapore government's non-corruptive policies and transparent way to technology dissemination are something very laudable. Singapore government is always focused on updating to and implementing the latest available technologies all around the world for the benefit of its citizens and their environment.

